

Abstract

This invention provides designs for communication systems that use adaptive filters in circuits whose purpose is to enable two-way transmission of information signals in the same frequency band at the same time over twisted pair channels, coaxial cable channels, fiber optic channels, or wireless channels. The methodology
5 allows two-way DSL transmission over telephone lines, making use of existing DSL hardware and signal standards, so that the upload speed is increased by an approximate factor of ten. Applied to wireless systems with single antennas at the two ends of the channel, a doubling of the data rate is achieved for a given bandwidth. Applied to
10 wireless systems with 2-way adaptive antenna arrays at a central location and a 2-way adaptive antenna array at each of a plurality of subscriber locations, the data rate for a given bandwidth is increased by a large factor .